WHAT IS CLAIMED IS:

1. For use in a fixed wireless access network comprising a plurality of base stations capable of bidirectional time division duplex (TDD) communication with wireless access devices disposed at a plurality of subscriber premises, a radio frequency (RF) modem shelf comprising:

a first RF modem capable of communicating with a plurality of said wireless access devices using TDD frames, each TDD frame having an uplink for receiving data and a downlink for transmitting data; and

a modulation controller associated with said RF modem shelf capable of determining an optimum modulation configuration for each of said plurality of wireless access devices communicating with said first RF modem, wherein said modulation controller causes said first RF modem to transmit first downlink data to a first wireless access device in a first data block having a first optimum modulation configuration and to transmit second downlink data to said first wireless access device in a second data block having a different second optimum modulation configuration.

2. The RF modem shelf as set forth in Claim 1 wherein said modulation controller determines said first and second optimum modulation configurations based on 1) channel conditions associated with a first channel used to communicate with said first wireless access device and 2) a first service type associated with said first downlink data and a second service type associated with said second downlink data.

3. The RF modem shelf as set forth in Claim 2 wherein said first modulation configuration comprises a first modulation format and said second modulation configuration comprises a different second modulation format.

4. The RF modem shelf as set forth in Claim 3 wherein said second modulation format is more complex than said first modulation format if said first service type requires a lower bit error rate than said second service type.

5. The RF modem shelf as set forth in Claim 4 wherein said first and second modulation formats comprise one of binary phase shift keying (BPSK), quadrature phase shift keying (QPSK), and 16 quadrature amplitude modulation (QAM).

6. The RF modem shelf as set forth in Claim 3 wherein said first modulation configuration comprises a first forward error correction code level and said second modulation configuration comprises a different second forward error correction code level.

7. The RF modem shelf as set forth in Claim 6 wherein said first error correction code level is more complex than said second error correction code level if said first service type requires a lower bit error rate than said second service type.

8. A fixed wireless access network comprising:

a plurality of base stations capable of bidirectional time division duplex (TDD) communication with wireless access devices disposed at a plurality of subscriber premises; and

a radio frequency (RF) modem shelf comprising:

a first RF modem capable of communicating with a plurality of said wireless access devices using TDD frames, each TDD frame having an uplink for receiving data and a downlink for transmitting data; and

a modulation controller associated with said RF modem shelf capable of determining an optimum modulation configuration for each of said plurality of wireless access devices communicating with said first RF modem, wherein said modulation controller causes said first RF modem to transmit first downlink data to a first wireless access device in a first data block having a first optimum modulation configuration and to transmit second downlink data to said first wireless access device in a second data block having a different second optimum modulation configuration.

9. The fixed wireless access network as set forth in Claim 8 wherein said modulation controller determines said first and second optimum modulation configurations based on 1) channel conditions associated with a first channel used to communicate with said first wireless access device and 2) a first service type associated with said first downlink data and a second service type associated with said second downlink data.

10. The fixed wireless access network as set forth in Claim 9 wherein said first modulation configuration comprises a first modulation format and said second modulation configuration comprises a different second modulation format.

11. The fixed wireless access network as set forth in Claim 10 wherein said second modulation format is more complex than said first modulation format if said first service type requires a lower bit error rate than said second service type.

12. The fixed wireless access network as set forth in Claim 11 wherein said first and second modulation formats comprise one of binary phase shift keying (BPSK), quadrature phase shift keying (QPSK), and 16 quadrature amplitude modulation (QAM).

13. The fixed wireless access network as set forth in Claim 9 wherein said first modulation configuration comprises a first forward error correction code level and said second modulation configuration comprises a different second forward error correction code level.

14. The fixed wireless access network as set forth in Claim 13 wherein said first error correction code level is more complex than said second error correction code level if said first service type requires a lower bit error rate than said second service type.